CLAIMS

In the claims:

1). (Original) A method, comprising:
performing parameterization on three-dimensional graphics model geometric data;
performing scalar quantization on the three-dimensional graphics model geometric data;
encoding the three-dimensional graphics model geometric data differentially; and
generating coded and compressed three-dimensional graphics model geometric data.

2). (Original) The method of claim 1, wherein the three-dimensional graphics model geometric data includes normalized normal vectors.

3). (Original) The method of claim 2, wherein performing parameterization further comprises mapping the normalized normal vectors into actual spherical coordinate values.

4). (Original) The method of claim 3, wherein performing scalar quantization further comprises generating actual quantized spherical coordinate values.

5). (Original) The method of claim 4, wherein encoding the three-dimensional graphics model geometric data differentially further comprises:
generating predicted quantized spherical coordinate values from at least one actual previously quantized spherical coordinate value; and
generating error values by subtracting the predicted quantized spherical coordinate values from the actual quantized spherical coordinate values.

6). (Original) The method of claim 5, further comprising encoding the error values using entropy encoding.

7). (Original) The method of claim 6, wherein the coded and compressed data is Motion Pictures Experts Group 4, 3 Dimension Model Coded (MPEG4 3DMC).

8). (Original) A system, comprising:
means for performing parameterization on three-dimensional graphics model geometric data;

means for performing scalar quantization on the three-dimensional graphics model geometric data;

means for encoding the three-dimensional graphics model geometric data differentially; and

means for generating coded and compressed three-dimensional graphics model geometric data.

9). (Original) The system of claim 8, wherein the three-dimensional graphics model geometric data includes normalized normal vectors.

10).(Original) The system of claim 9, wherein the means for performing parameterization further comprises means for mapping the normalized normal vectors into actual spherical coordinate values.

11).(Original) The system of claim 9, wherein performing scalar quantization further comprises generating actual quantized spherical coordinate values.

12).(Original) The system of claim 11, wherein the means for encoding the three-dimensional graphics model geometric data differentially further comprises:

means for generating predicted quantized spherical coordinate values from at least one actual previously quantized spherical coordinate value; and

means for generating error values by subtracting the predicted quantized spherical coordinate values from the actual quantized spherical coordinate values.

13).(Original) The system of claim 12, further comprising means for encoding the error values using entropy encoding.

14).(Original) The system of claim 13, wherein the coded and compressed data is Motion Pictures Experts Group 4, 3 Dimension Model Coded (MPEG4 3DMC).

15).(Original) A computer-readable medium having stored thereon a plurality of instructions, said plurality of instructions when executed by a computer, cause said computer to perform:

performing parameterization on three-dimensional graphics model geometric data;

performing scalar quantization on the three-dimensional graphics model geometric data;

encoding the three-dimensional graphics model geometric data differentially; and

generating coded and compressed three-dimensional graphics model geometric data.

16).(Original) The computer-readable medium of claim 15 having stored thereon additional instructions, said additional instructions when executed by a computer, cause said computer to further perform normalizing normal vectors from the three-dimensional graphics model geometric data.

17).(Original) The computer-readable medium of claim 16 having stored thereon additional instructions, said additional instructions when executed by a computer for performing parameterization, cause said computer to further perform mapping the normalized normal vectors into actual spherical coordinate values.

18).(Original) The computer-readable medium of claim 16 having stored thereon additional instructions, said additional instructions when executed by a computer for performing quantization, cause said computer to further perform generating actual quantized spherical coordinate values

19).(Original) The computer-readable medium of claim 18 having stored thereon additional instructions, said additional instructions when executed by a computer for encoding the three-dimensional graphics model geometric data differentially, cause said computer to further perform:

generating predicted quantized spherical coordinate values from at least one actual previously quantized spherical coordinate value; and

generating error values by subtracting the predicted quantized spherical coordinate values from the actual quantized spherical coordinate values.

20).(Original) The computer-readable medium of claim 19 having stored thereon additional instructions, said additional instructions when executed by a computer, cause said computer to further perform encoding the error values using entropy encoding.

21).(Original) The computer-readable medium of claim 20, wherein the coded and compressed data is Motion Pictures Experts Group 4, 3 Dimension Model Coded (MPEG4 3DMC).

22).(Original) A system, comprising:

a parameterized normal encoder comprising,

a processor, wherein the processor performs scalar quantization and parameterization on three-dimensional graphics model geometric data; and

a storage device connected to the processor for storing instructions executed by the processor;

a predictor connected to the parameterized normal encoder; and

an entropy encoder connected to the predictor; wherein the system generates coded and compressed three-dimensional graphics model geometric data.

23).(Original) The system of claim 22, wherein the three-dimensional graphics model geometric data includes normalized normal vectors.

24).(Original) The system of claim 23, wherein the processor maps the normalized normal vectors into actual spherical coordinate values and quantizes the actual spherical coordinate values into actual quantized spherical coordinate values.

25).(Original) The system of claim 24, wherein the predictor generates predicted quantized spherical coordinate values from at least one actual previously quantized spherical coordinate value.

26).(Original) The system of claim 25, wherein the processor generates error values by subtracting the predicted quantized spherical coordinate values from the actual previously quantized spherical coordinate values.

27).(Original) The system of claim 25, wherein the entropy encoder encodes the error values using entropy encoding.

28).(Original) The system of claim 27, wherein the coded and compressed data is Motion Pictures Experts Group 4, 3 Dimension Model Coded (MPEG4 3DMC).

29).(Original) A method, comprising:

generating actual quantized spherical coordinate values by adding error values to predicted quantized spherical coordinate values;

performing deparameterization and scalar dequantization on the actual quantized spherical coordinate values; and

generating decompressed three-dimensional graphics model geometric data from the dequantized spherical coordinate values.

30).(Original) The method of claim 29, wherein performing deparameterization and scalar dequantization further comprises mapping spherical coordinate values into decoded, dequantized, unnormalized normal vectors.

31).(Original) The method of claim 30, further comprising decoding compressed three-dimensional graphics model geometric data using entropy decoding, wherein the compressed three-dimensional graphics model geometric data contains error values.

32).(Original) The method of claim 31, wherein generating actual quantized spherical coordinate values further comprises:

adding error values to the predicted quantized spherical coordinate values to generate the actual quantized spherical coordinate values.

33).(Original) The method of claim 32, wherein the compressed three-dimensional graphics model geometric data is MPEG4 3DMC.

34).(Original) A system, comprising:

means for generating actual quantized spherical coordinate values by adding error values to predicted quantized spherical coordinate values;

means for performing deparameterization and scalar dequantization on the actual quantized spherical coordinate values; and

means for generating decompressed three-dimensional graphics model geometric data from the dequantized spherical coordinate values.

35).(Original) The system of claim 34, wherein the means for performing deparameterization and scalar dequantization further comprises means for mapping spherical coordinate values into decoded, dequantized, unnormalized normal vectors.

36).(Original) The system of claim 35, further comprising means for decoding compressed three-dimensional graphics model geometric data using entropy decoding, wherein the compressed three-dimensional graphics model geometric data contains error values.

37).(Original) The system of claim 36, wherein the means for generating actual quantized spherical coordinate values further comprises:

means for adding error values to predicted quantized spherical coordinate values to generate the actual quantized spherical coordinate values.

A1

38).(Original) The system of claim 37, wherein the compressed three-dimensional graphics model geometric data is MPEG4 3DMC.

39).(Original) A computer-readable medium having stored thereon a plurality of instructions, said plurality of instructions when executed by a computer, cause said computer to perform:

generating actual quantized spherical coordinate values by adding error values to predicted quantized spherical coordinate values;

performing deparameterization and scalar dequantization on the actual quantized spherical coordinate values; and

generating three-dimensional graphics model geometric data from the dequantized spherical coordinate values.

40).(Original) The computer-readable medium of claim 39 having stored thereon additional instructions, said additional instructions when executed by a computer for performing deparameterization and scalar dequantization, cause said computer to further perform mapping spherical coordinate values into decoded, dequantized, unnormalized normal vectors.

41).(Original) The computer-readable medium of claim 40 having stored thereon additional instructions, said additional instructions when executed by a computer, cause said computer to further perform decoding compressed three-dimensional graphics model geometric data using entropy decoding, wherein the compressed three-dimensional graphics model geometric data contains error values.

42).(Original) The computer-readable medium of claim 41 having stored thereon additional instructions, said additional instructions when executed by a computer for generating actual

spherical coordinate values, cause said computer to further add error values to predicted quantized spherical coordinate values to generate the actual quantized spherical coordinate values.

43).(Original) The computer-readable medium of claim 42, wherein the compressed three-dimensional graphics model geometric data is MPEG4 3DMC.

44).(Original) A system, comprising:

a parameterized normal decoder comprising,

a processor, wherein the processor performs deparameterization and scalar dequantization on compressed three-dimensional graphics model geometric data; and

a storage device connected to the processor for storing instructions executed by the processor;

a predictor connected to the parameterized normal decoder; and

an entropy decoder connected to the predictor.

45).(Original) The system of claim 44, wherein the compressed three-dimensional graphics model geometric data includes error values.

46).(Original) The system of claim 45, wherein the processor maps actual spherical coordinate values into reconstructed unnormalized, dequantized normal vectors.

47).(Original) The system of claim 46, wherein the predictor generates predicted quantized spherical coordinate values from at least one actual previously quantized spherical coordinate value.

48).(Original) The system of claim 47, wherein the processor generates actual quantized spherical coordinate values by adding error values to the predicted quantized spherical coordinate values.

49).(Original) The system of claim 48, wherein the entropy decoder decodes the error values using entropy decoding